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NXP, B.V.
NXP INTELLECTUAL PROPERTY DEPARTMENT
M/S41-SJ
1109 MCKAY DRIVE
SAN JOSE, CA 95131

EXAMINER	
PERILLA, JASON M	

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No.	Applicant(s)	
	10/539,355	ALI, DANISH	
	Examiner	Art Unit	
	JASON M. PERILLA	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 19-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 and 19-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-17, and 19-21 are pending in the instant application.

Response to Amendment/Argument

2. The Applicant's remarks, filed June 30, 2008, have been fully considered.

The Applicant argues against the application of Reshef (U.S. Pat. No. 6529559) under 35 U.S.C. § 102(e). Specifically, the Applicant suggests that Reshef discloses assigning confidence values to *symbols* rather than *bits* of the symbols as claimed. However, Reshef does disclose assigning confidence values to bits of symbols. Reshef discloses a soft symbol to soft bit converter (fig. 3, ref. 86) which "converts the soft *symbol* information to soft *bit* information." (col. 11, lines 4-12). Therefore, although the Applicant is correct that Reshef discloses determining confidence values of symbols (i.e. via fig. 3, ref. 84), Reshef also discloses converting these confidence values of symbols into confidence values of bits.

Regarding the Applicant's arguments against the rejection of claims 8 and 17 under 35 U.S.C. § 103(c), they are not persuasive. It is admitted by the examiner that Reshef does not explicitly disclose depuncturing. However, it follows from the fact that puncturing is used by Reshef in *encoding* (i.e. "punctured rate 1/3 convolutional coding"; col. 19, lines 56-63) that depuncturing should be used in *decoding* to maintain the integrity of the data received. Therefore, depuncturing is considered to be at least implied in the disclosure of Reshef. Otherwise, the use of depuncturing is considered to be obvious to one having ordinary skill in the art as being complementary to Reshef's puncturing for data integrity.

New grounds of rejection are set forth below based on the new claims.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. § 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 19 is rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

Regarding claim 19, the claim is rejected because it is directed to non-statutory subject matter (i.e. it is none of a product, process, composition of matter, etc.) A look up table is merely a table of data and is not statutory subject matter. A statutory claim would read as "A method of producing a look-up table . . . . "

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 19 is rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 19, the claim is not enabled because the specification does not permit one having ordinary skill in the art the ability to make or use the invention as claimed. Specifically, the claim provides that a lookup table is generated *during the steps utilized for decoding using the table itself*. That is, the claim confuses generating

the lookup table with using the lookup table. Moreover, the claim is indefinite because one skilled in the art is unable to clearly determine if the claim is based upon decoding using a look-up table or generating a look-up table. It is noted by the Examiner that an if the invention is based upon generating a look-up table, it may be subject to a restriction requirement.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claim 1-4, 6, 7, 9, 10-13, 15, 16, and 19-21 are rejected under 35 U.S.C. § 102(e) as being anticipated by Reshef (U.S. Pat. No. 6529559).

Regarding claim 1, Reshef discloses a method of processing a data signal transmitted over a channel (fig. 2, ref. 42) comprising receiving a data sequence incorporating PSK symbols (fig. 4, col. 15, lines 35-45), separating the data sequence into bits of symbols ("Rx front end circuitry 52 which demodulates and *samples* the received signal to generate *received samples y(k)*"; col. 9, lines 20-25), assigning a confidence value to each bit in a symbol (fig. 3, ref. 86; col. 11, lines 4-12), and effecting convolutional decoding (fig. 2, ref. 64) of the bit stream associated with the assigned confidence values. Reshef discloses a data signal processor which demodulates (fig. 2,

ref. 52) a received signal, equalizes it with a hard decision output (col. 9, lines 15-20 and 55-60), converts the hard decisions from the equalizer into corresponding confidence values or "reliabilities" (fig. 3, ref. 84; col. 10, lines 59-65), and passes the confidence values to a convolutional decoder (fig. 2, ref. 52; col. 3, lines 5-10).

Regarding claim 2, Reshef discloses the limitations of claim 1 as applied above. Further, Reshef discloses that the step of assigning a confidence value comprises, in part, mapping symbols to binary bits by means of a Gray code (col. 15, lines 35-53).

Regarding claim 3, Reshef discloses the limitations of claim 1 as applied above. Further, Reshef discloses incorporating data from the step of assigning in a look-up table for reference (col. 16, lines 25-53).

Regarding claim 4, Reshef discloses the limitations of claim 1 according to Reshef's embodiment of figures 2 and 3 as applied above. Reshef does not explicitly disclose, according to his figures 2 and 3 embodiment, re-coding hard decisions as an (I,Q) pair and taking soft decisions therefrom. However, Reshef discloses, in a separate embodiment according to figure 9, re-coding hard decisions as an (I,Q) pair (fig. 9, refs. 156, 158, and 160) and taking soft decisions therefrom (fig. 9, ref. 162). Moreover, Reshef discloses that the method of the embodiment of figure 3 is incorporated in to the method of the embodiment of figure 9 (col. 19, lines 25-40; i.e. within block 162 of figure 9). Therefore, Reshef's embodiment of figure 9, which incorporates all the features of the figure 3 embodiment (i.e. the limitations of claim 1), discloses all the limitations of claim 4.

Regarding claim 6, Reshef discloses the limitations of claim 1 as applied above. Further, Reshef discloses an executable software (fig. 12) embodiment wherein a digital processor (fig. 12, ref. 202) is "operative to execute software adapted to perform the reduced information packet method" of his invention (col. 20, lines 25-50). Therefore, in such embodiment, Reshef's equalization (fig. 2, ref. 56) is performed by a digital processor.

Regarding claim 7, Reshef discloses the limitations of claim 1 as applied above. Further, Reshef discloses an executable software (fig. 12) embodiment wherein a digital processor (fig. 12, ref. 202) is "operative to execute software adapted to perform the reduced information packet method" of his invention (col. 20, lines 25-50). Therefore, in such embodiment, Reshef's equalization (fig. 2, ref. 56) is performed by a dedicated signal processing hardware (fig. 12, ref. 202) for equalization.

Regarding claim 9, Reshef discloses a computer program product directly loadable into the internal memory of a digital computer, comprising software code portions for performing the steps of claim 1 (as applied above in claim 1) when said product is run a computer (col. 20, line 25 – col. 21, line 20).

Regarding claim 10, Reshef discloses the limitations of the claim as applied to claim 1 above.

Regarding claim 11, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 2 above.

Regarding claim 12, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 3 above.

Regarding claim 13, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 4 above.

Regarding claim 15, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 6 above.

Regarding claim 16, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 7 above.

Regarding claim 19, Reshef discloses a look-up table (table 1; col. 16, lines 30-45) produced by: separating a received data sequence incorporating PSK symbols into bits of symbols (Reference Symbol column); for each bit in a symbol, assigning a confidence value to the bit based upon the position (i.e. MSB, SSB, or LSB) of the bit in its symbol; and storing data (i.e. the 0's and 1's of the table) indicating the assigned confidence value in a lookup table for use in effecting convolutional decoding (fig. 2, ref. 60) of a bit stream.

Regarding claim 20, Reshef discloses the limitations of claim 1 as applied above. Further, Reshef discloses that the step of assigning a confidence value to each bit in a symbol includes assigning a confidence value based upon the position of the bit in its

symbol (see, generally, table 1, col. 16, lines 30-45). According to Reshef's confidence value correspondence table, the confidence value to be assigned is dependent upon bit position (i.e. MSB, SSB, or LSB) for the reference symbol.

Regarding claim 21, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 20 above.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 5 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Reshef in view of Ojard et al (U.S. Pat. No. 6826242; "Ojard").

Regarding claim 5, Reshef discloses the limitations of claim 1 as applied above. Reshef discloses the possible use of a decision feedback equalizer or "DFE" (col. 9, lines 55-60) but does not explicitly disclose using a DFE with whitening matched filtering. However, Ojard teaches the benefits of using a DFE with a whitening filter. Ojard teaches that using a whitening filter reduces noise power and partially or fully cancels interfering signals (col. 18, lines 34-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made that the DFE of Reshef could be modified to utilize a whitening filter as suggested by Ojard

because it aides in reducing noise power and partially or fully cancelling interfering signals.

Regarding claim 14, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef in view of Ojard disclose the remaining limitations of the claim as applied 5 above.

11. Claims 8 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Reshef.

Regarding claim 8, Reshef discloses the limitations of claim 1 as applied above. Further, Reshef discloses de-interleaving (fig. 2, ref. 62; col. 10, lines 20-25), and incremental redundancy steps (col. 3, lines 2-5) before convolutional decoding (fig. 2, ref. 64). Reshef discloses that the encoder (fig. 2, ref. 34) adds “redundancy” bits to the transmitted data (col. 8, lines 40-46). Hence, the decoder, must act upon the redundancy in “incremental redundancy steps” to remove the redundancy (col. 3, lines 2-5). Moreover, in conjunction with Reshef's simulated embodiment of figure 9 (which inherits the features of the embodiment of figures 2 and 3), it is disclosed that 8-PSK bursts are modulated utilizing "punctured rate 1/3 convolutional coding" (col. 19, lines 56-63). Reshef does not explicitly disclose de-puncturing the encoded data among decoding of a transmitted signal (i.e. fig. 9, ref. 162). However, for the utility of the receipt of punctured encoded data, one skilled in the art would find it obvious to de-puncture the received data before decoding it. Therefore, because puncturing is utilized in the coding of Reshef’s signals transmitted, it is obvious to one having ordinary skill in the art at the time which the invention was made that Reshef’s decoder should utilize

de-puncturing as a compliment to the puncturing encoding to maintain the integrity of the data transmitted.

Regarding claim 17, Reshef discloses the limitations of claim 10 as applied above. Further, Reshef discloses the remaining limitations of the claim as applied 8 above.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON M. PERILLA whose telephone number is (571)272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason M Perilla/
Primary Examiner, Art Unit 2611
August 29, 2008

/jmp/

/Chieh M Fan/
Supervisory Patent Examiner, Art Unit 2611